John Mitchell Clay

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EDUCATION

University of Kentucky, Lexington, KY ***Expected May 2020***
Doctor of Philosophy in Geological Science – Current GPA: 3.67
PhD Dissertation: "Double-double dating" of detrital monazite and detrital zircon: Quantifying sediment recycling in tectonic studies

Montclair State University, Montclair, NJ ***August 2017***
Master of Science in Geoscience – GPA: 3.97
Master's Thesis: Petrogenesis of Pleisto-Holocene basalts and basaltic andesites from Newberry Volcano, Bend, Oregon

Lock Haven University, Lock Haven, PA ***May 2015***
Bachelor of Science in Geology – GPA: 3.65
Capstone Research: Analyzing the properties of gabbro from Bucks County, Pennsylvania to determine the source of unexpected audible qualities

RECOGNITION

Pioneer Graduate Excellence Award ***August 2017***
College of Arts and Sciences, University of Kentucky

Outstanding Teaching Assistant Award ***April 2017***
College of Science and Mathematics, Montclair State University

Service Award to the Department of Earth and Environmental Studies ***April 2017***
College of Science and Mathematics, Montclair State University

Margaret and Herman Sokol Foundation Graduate Summer Research Fellowship Award ***May 2016***
College of Science and Mathematics, Montclair State University

Dr. Donald and Linda Green Geology Award ***April 2014***
College of Natural, Behavioral, and Health Sciences, Lock Haven University

RESEARCH EXPERIENCE

Research Assistant ***August 2017 – December 2017***
Department of Earth and Environmental Sciences, College of Arts and Sciences, University of Kentucky, Lexington, KY
Advisor: Dr. David Moecher

- Department research assistant for an NSF grant funded project involving the quantification of recycled sediment in a foreland basin
- Research employs the use of U-Pb geochronology and (U-Th)/He thermochronology of detrital zircon and Th-Pb geochronology and (U-Th-Sm)/He double dating of detrital monazite
- Novel approach to understanding the evolution of foreland basins on Laurentia during the Meso-Neoproterozoic to apply knowledge to Phanerozoic and current systems

Research Technician ***June 2017 – August 2017***

Department of Earth and Environmental Studies, College of Science and Mathematics, Montclair State University, Montclair, NJ

Advisor: Dr. Stefanie Brachfeld

- Participant in NSF grant funded research involving the study of magnetics and provenance of Antarctic lithics
- Point counting microscope slides, creating a mineral reference guide, and Nalgene laboratory preparation

Summer Graduate Research Fellow ***June 2016 – September 2016***

Department of Earth and Environmental Studies, College of Science and Mathematics, Montclair State University, Montclair, NJ

Advisor: Dr. Matthew Gorring

- Awarded the Margaret & Herman Sokol Foundation Summer Graduate Research Fellowship
- Conducting a survey of basaltic lavas at Newberry Volcano, Bend, OR for a field season of 8 days to carry out further petrologic research for thesis topic: *Petrogenetic origin of mafic lavas at Newberry Volcano, Bend, OR*
- Direct rock crushing and mass spectrometry preparation of basalt samples to carry out major, trace, and isotopic element analyses for master's thesis data collection

Mineralogy Laboratory Technician ***August 2013 – May 2015***

Department of Geology and Physics, College of Natural, Behavioral, and Health Sciences, Lock Haven University, Lock Haven, PA

Advisor: Dr. Loretta Dickson

- Maintaining and operating laboratory devices while assisting students in their research
- Researching the effects of Marcellus Shale fracture drilling by using barium contaminants to simulate fracking fluid in the environment
- Initiating petrologic research on mafic igneous rocks from Bucks County, PA and other Central Atlantic Magmatic Province rocks with an emphasis on laboratory fusion and XRF analysis for independent research titled: *Geochemistry and textural properties of Pennsylvania diabase associated with CAMP magmas*

PROFESSIONAL EXPERIENCE

Teaching Assistant ***January 2018 – Present***

Department of Earth and Environmental Sciences, College of Arts and Sciences, University of Kentucky, Lexington, KY

- Teaching assistant for Mineralogy (EES360) and Fundamentals of Geology I (EES230)
- Instructing laboratory sessions for mineralogy and grading all course assignments/examinations
- Assisting with field and lab exercises for fundamentals of geology
- Holding study sessions during scheduled office hours or by appointment

Graduate Assistant ***September 2015 – June 2017***

Department of Earth and Environmental Studies, College of Science and Mathematics, Montclair State University, Montclair, NJ

- Teaching assistant for Mineralogy (EAES220) and Igneous and Metamorphic Petrology (EAES320)
- Completing assignments directly related to instructional activities in geological fields of study, to an on-going faculty research initiative or field work
- Tutoring undergraduate students in mineralogy, petrology, microscopy and other related topics
- Conducting laboratory training for use of advanced geochemical analytical techniques
- Managing lab session and assisting the instructor in teaching undergraduate students and preparing laboratory exercises

- Assisting masters and doctoral students in conducting analytical geochemical lab preparation
- Developing and implementing advanced post data processing for trace and REE geochemical analysis

Program Instructor ***July 2016***
Gifted and Talented School, College of Education and Human Services, Montclair State University, Montclair, NJ
- Creating lesson plans, writing lectures and managing classroom instruction for class: From Tsunamis to Supervolcanoes
- Program design for students in grades 7-12 to learn about natural disasters at a collegiate institutional level
- Designing laboratory experiments for students to understand a variety of volcanic eruptions and earthquake scenarios

Field Geology Technician ***May 2016 – June 2016***
Department of Earth and Environmental Studies, College of Science and Mathematics, Montclair State University, Montclair, NJ
- Teaching assistant for Field Geology (EAES404)
- Managing equipment and assisting instruction of a field geology course at the New Jersey School of Conservation at Branchville, NJ
- Field geology graduate assistant for MSU at the Yellowstone-Bighorn Research Association at Red Lodge, MT, as well as at the University of Montana-Western at Dillon, MT
- Responsibilities include transportation of field equipment and undergraduate students, guiding field mapping exercises, and assisting in creating final geologic map products

Student Assistant ***December 2013 – May 2015***
Department of Geology and Physics, College of Natural, Behavioral, and Health Sciences, Lock Haven University, Lock Haven, PA
- Teaching assistant for Principles of Geology I (GEOS130), Principles of Geology II (GEOS131), and Oceanography (GEOS115)
- Tutoring undergraduate students in physical and historical geology and other related topics
- Assisting in building laboratory exercises per instructions in lab manual and overseeing laboratory exercises alongside professor while assisting in answering introductory students' questions
- Supporting advanced students by instructing thin section preparation and use of the petrographic microscope
- Creating and preparing study sessions for Principles of Geology instructor lectures

ABSTRACTS AND PRESENTATIONS

Rast-Holbrook Seminar **Lexington, KY**
Clay, J. M. New geochemical evidence for the tectonic origin of Newberry Volcano in the Cascade rear arc, *Rast-Holbrook Seminar Series,* Lexington, KY (07 December 2017).

2017 Annual Meeting of The Geological Society of America **Seattle, WA**
Clay, J. M., Gorring, M. L., and Blacic, T. M. Petrogenesis of Pleisto-Holocene basalts from Newberry Volcano, Oregon, Abstract, *2017 GSA Annual Meeting*, Seattle, WA (25 October 2017).

Student Research Symposium **Montclair, NJ**
Clay, J. M., Gorring, M. L., and Blacic, T. M. Petrogenetic origin of mafic lavas at Newberry Volcano, Bend, OR, Abstract, *11th Annual Student Research Symposium*, Montclair, NJ (28 April 2017).

2017 Northeastern Meeting of The Geological Society of America **Pittsburgh, PA**
Clay, J. M., Gorring, M. L., and Blacic, T. M. Petrogenetic origin of mafic lavas at Newberry Volcano, Bend, OR, Abstract, *2017 GSA NE Annual Meeting*, Pittsburgh, PA (19 March 2017).

Celebration of Scholarship **Lock Haven, PA**
Brydon, R. J., **Clay, J. M.**, and Dickson, L. D. Geochemistry and textural properties of Pennsylvania gabbro, Abstract, *9th Annual Celebration of Scholarship*, Lock Haven, PA (22 April 2015).

Celebration of Scholarship **Lock Haven, PA**
Clay, J. M. and Dickson, L. D. Analyzing the properties of gabbro from Bucks County, PA to determine the source of unexpected audible qualities, Abstract, *8th Annual Celebration of Scholarship*, Lock Haven, PA (23 April 2014).

RELEVANT COURSES TAKEN

- Residency Credit for Doctoral Degree
- Collisional Orogens
- Earth Systems Science
- Master's Thesis
- Scientific Communication
- Exploration Seismology
- Stable Isotope Geochemistry
- Problems in Earth and Environmental Studies
- Research in Geoscience Literature
- Principles of Soil Science
- Advanced Marine Geology
- Low Temperature Geochemistry
- X-Ray Microanalysis
- Igneous and Metamorphic Geology
- Environmental Geoscience
- Independent Study Research
- Capstone Research Project
- Geophysics and Tectonics
- Structural Geology
- Geology of Energy and Mineral Resources
- Stratigraphy
- Hydrogeology
- Gemology
- Sedimentology
- Conservation of Natural Resources
- Mineralogy and Petrology
- Invertebrate Paleontology
- Geology Field Course
- Geomorphology
- Environmental Geology
- Introduction to GIS
- Foundations of Group Peer Tutoring
- Calculus 1
- Principles of Geology II
- Principles of Geology I
- Physics 2
- Physics 1
- Principles of Chemistry 2
- Principles of Chemistry 1
- Principles of Biology 2
- Principles of Biology 1
- Physical Geography

INSTRUMENTATION AND SOFTWARE

- Adobe illustration
- ArcGIS mapping
- Binocular microscopy
- Chromium offline laser targeting
- Electronic total station surveillance
- Energy dispersive x-ray spectroscopy (EDX)
- Frantz magnetic separation
- Google Earth
- Heavy liquid mineral separation
- Inductively coupled plasma mass spectrometry (ICP-MS)
- Inductively coupled plasma optical emission spectrometry (ICP-OES)
- Laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS)
- Microsoft Office suite
- Multi-collector inductively coupled plasma mass spectrometry (MC-ICP-MS)
- Petrographic microscopy

- Photomicrography
- Rock crushing and powdering
- Scanning electron microscopy (SEM)
- Thermal ionization mass spectrometry (TIMS)
- Thin section design
- X-ray diffractometry (XRD)
- X-ray fluorescence detection (XRF)

PROFESSIONAL MEMBERSHIPS

The Geological Society of America Southeast Section Member	October 2017 – Present
University of Kentucky Geology Club Member	September 2017 – Present
Montclair State University Alumni Affiliation	August 2017 – Present
American Institute of Professional Geologists	March 2017 – Present
The Geological Society of America Northeast Section Member	December 2016 – Present
The Geological Society of America Cordilleran Section Member	December 2016 – Present
Yellowstone-Bighorn Research Association Member	June 2016 – Present
Lock Haven University Alumni Affiliation	May 2015 – Present
Member of the Lock Haven University Geoscience Club	August 2011 - May 2015

PROFESSIONAL REFERENCES

Dr. Stefanie Brachfeld
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Department of Earth and Environmental Studies
College of Science and Mathematics – Montclair State University
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